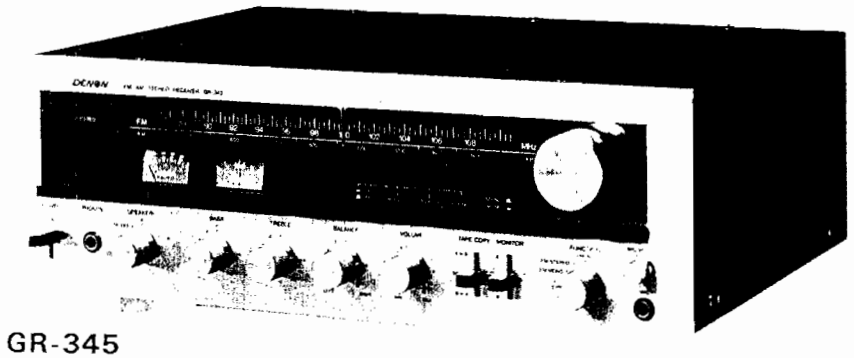
DENON

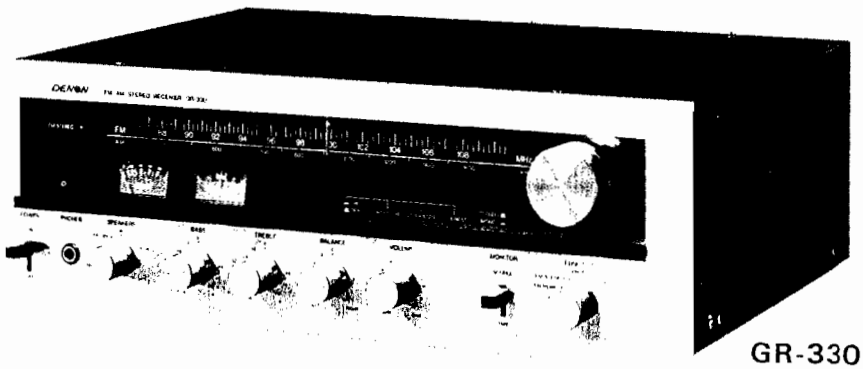
Hi-Fi Component/Receiver

SERVICE MANUAL

MODEL GR-345 , GR-330



GR-345



GR-330

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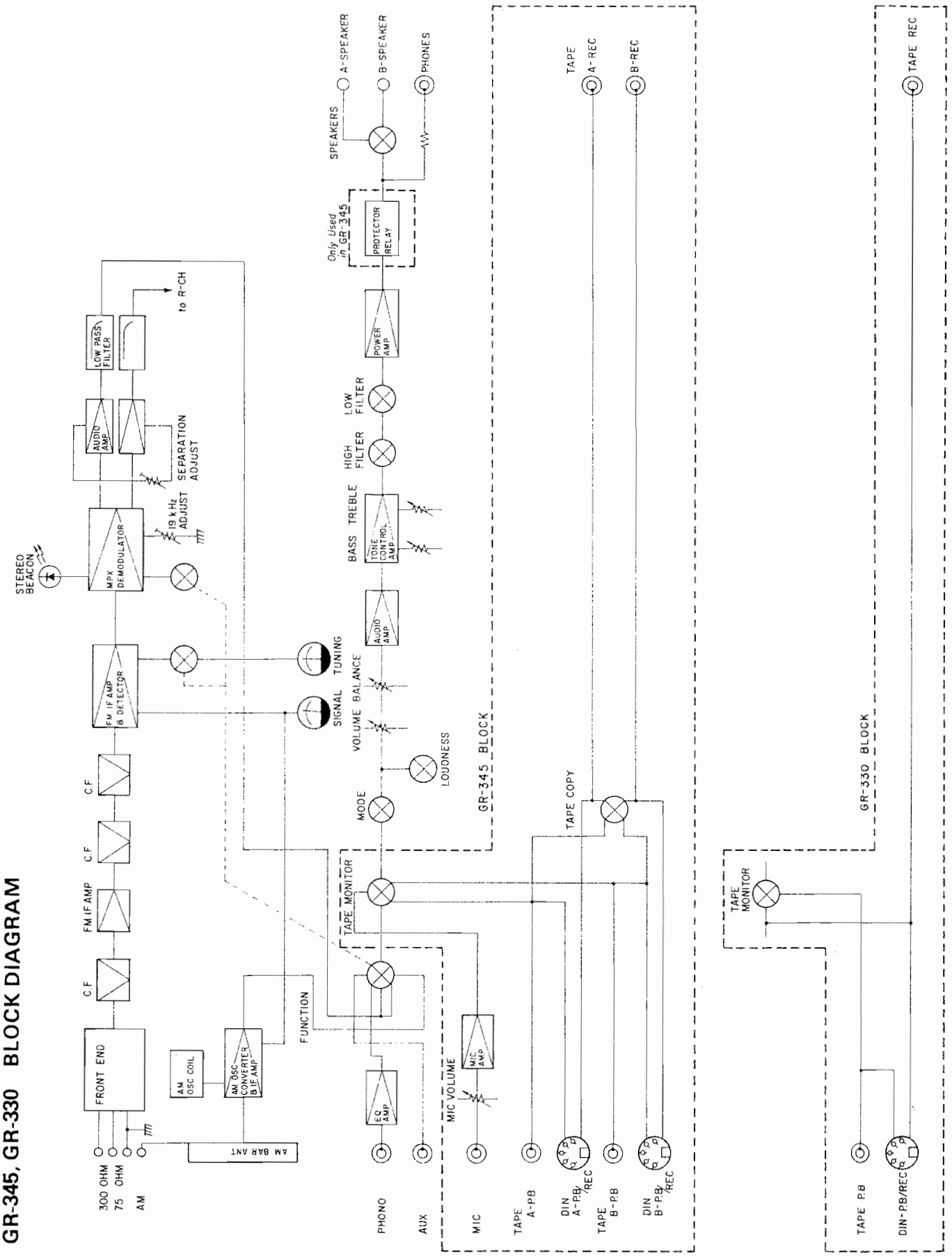
NIPPON COLUMBIA CO., LTD.

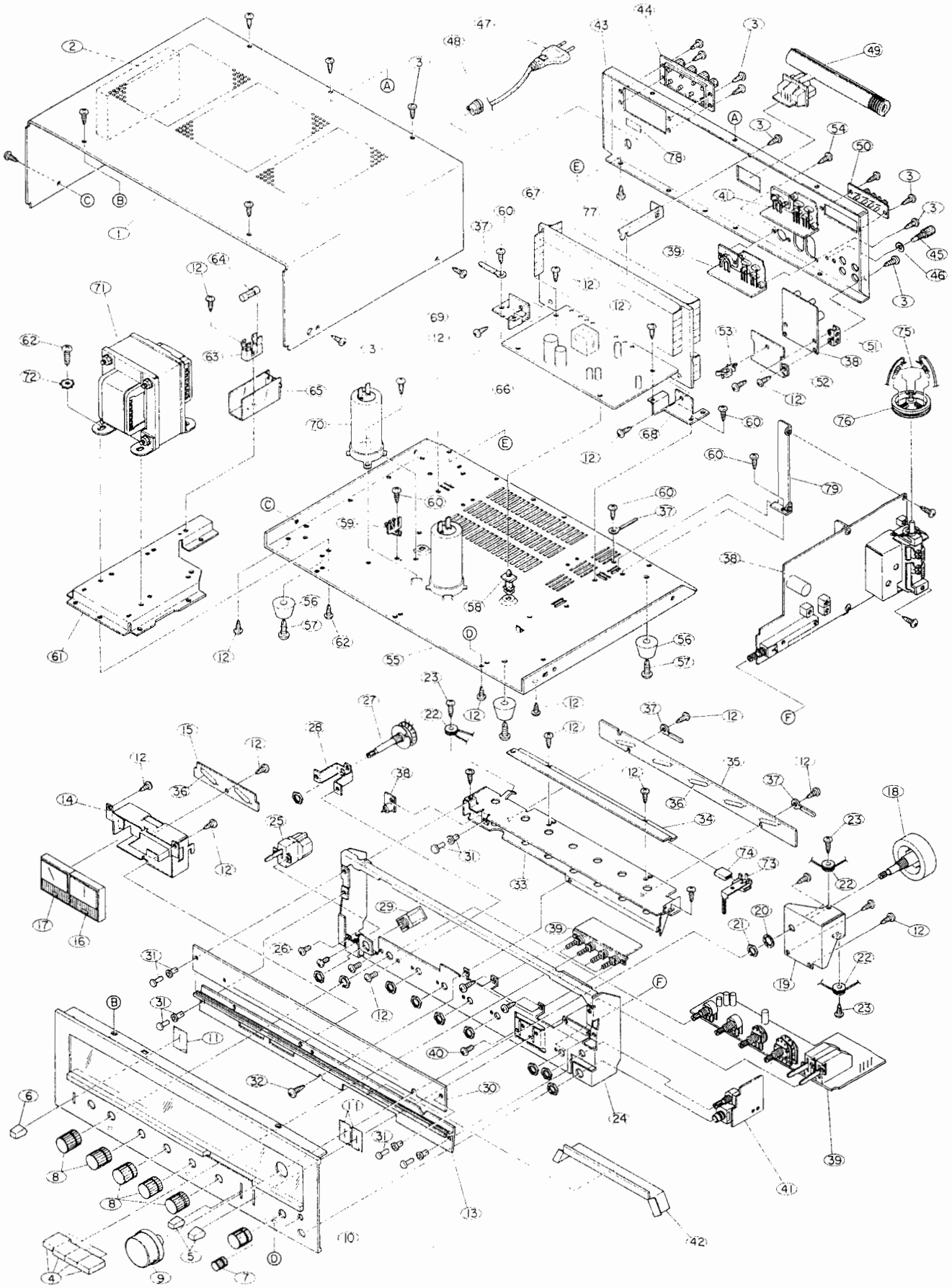
SPECIFICATIONS

	GR-345	GR-330
Semiconductors	6 IC, 1 FET 30 Transistors 18 Diodes, 1 LED	7 IC, 1 FET 13 Transistors 12 Diodes, 1 LED
FM SECTION		
Receiving range	87.5 to 108 MHz	87.5 to 108 MHz
Usable sensitivity (30 dB, 300 ohm)	2.0 μV	2.0 μV
Capture ratio	1.5 dB	1.5 dB
Alternate channel selectivity	75 dB	75 dB
Image rejection	60 dB	60 dB
IF rejection	70 dB	70 dB
Frequency response (20 – 15,000 Hz)	+0.5 −1.0 dB	+0.5 −1.0 dB
Harmonic distortion: Mono	0.15%	0.15%
Stereo	0.2%	0.2%
Stereo separation: (1 kHz)	50 dB	50 dB
(20 – 15,000 Hz)	30 dB	30 dB
Signal to noise ratio: Mono	73 dB	73 dB
Stereo	65 dB	65 dB
AM SECTION		
Receiving range	525 to 1605 kHz	525 to 1605 kHz
Signal to noise ratio	56 dB	56 dB
AMPLIFIER SECTION		
Power output	45W × 2 (8 ohm) 50W × 2 (4 ohm)	30W × 2 (8 ohm) 35W × 2 (4 ohm)
Harmonic distortion: (rated output)	0.5%	0.5%
(10W output)	0.05%	0.05%
Intermodulation distortion (10W output)	0.08%	0.08%
Power bandwidth	10 Hz to 40 kHz	10 Hz to 40 kHz
Damping factor	50	40
RIAA deviation	±0.8 dB	±0.8 dB
Sensitivity/Impedance: PHONO	2.5 mV/47 kohm	2.5 mV/47 kohm
AUX	200 mV/47 kohm	200 mV/47 kohm
MIC	2 mV/3.5 kohm	——
Signal to noise ratio: PHONO	70 dB	70 dB
AUX	80 dB	80 dB
MIC	70 dB	——
Output level: TAPE-REC	200 mV	200 mV
HEADPHONES	500 mV	500 mV
Tone control: TREBLE (10 kHz)	+ 10, − 12 dB	+ 10, − 12 dB
BASS (100 Hz)	+ 10, − 11 dB	+ 10, − 11 dB
Filter: HIGH (6 kHz)	− 6 dB/oct	− 6 dB/oct
LOW (120 Hz)	− 6 dB/oct	− 6 dB/oct
Loudness control	+ 8 dB/100 Hz	+ 8 dB/100 Hz
	+ 4 dB/10 kHz	+ 4 dB/10 kHz
POWER SOURCE	220 V, 50 Hz	220 V, 50 Hz
POWER CONSUMPTION	330 W	256 W
DIMENSIONS (W × H × D)	435 × 153 × 345 mm	435 × 153 × 345 mm
WEIGHT	10.3 kg	8.5 kg

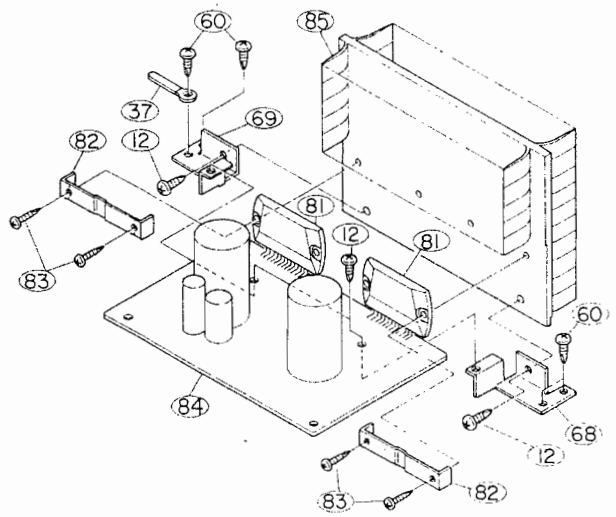
GR-345, GR-330 BLOCK DIAGRAM

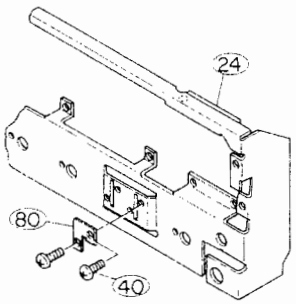


EXPLODED VIEW OF CHASSIS AND CABINET

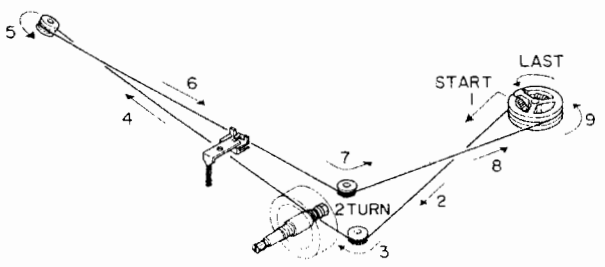


Only used in GR-330





DIAL STRING DIAGRAM

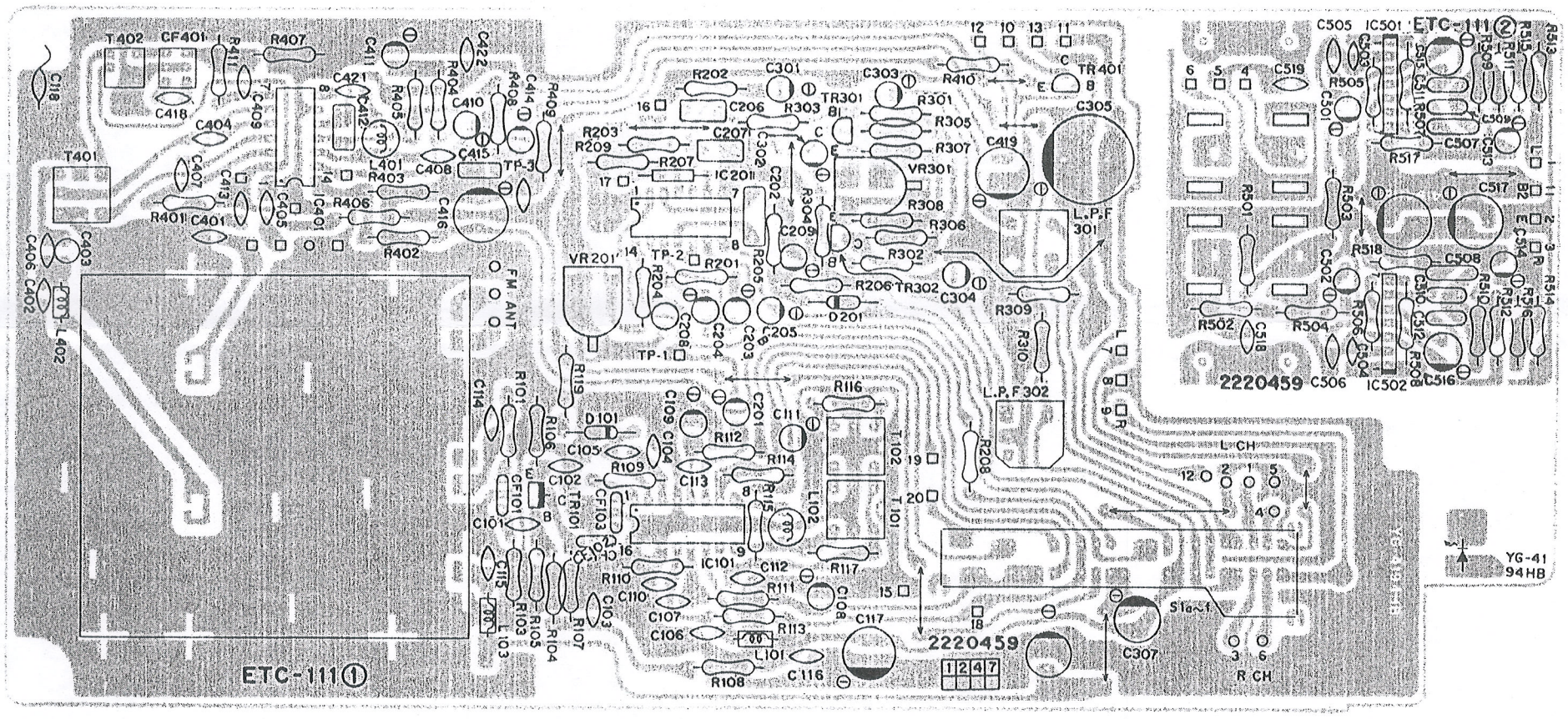


PARTS LIST

	GR-345		GR-330	
No.	Part No.		Part No.	PartName
1	1020077119	TOP COVER	1020077119	TOP COVER
2	4610105003	CUSHION RUBBER	—	—
3	4770064107	FIXING SCREW	4770064107	FIXING SCREW
4	1130120008	PUSH KNOB	1130120008	PUSH KNOB
5	1130122006	LEVER KNOB (B)	1130121007	LEVER KNOB (A)
6	1130121007	LEVER KNOB (A)	1130121007	LEVER KNOB (A)
7	1120204002	MIC KNOB	—	—
8	1120203003	KNOB	1120203003	KNOB
9	1120202004	TUNING KNOB	1120202004	TUNING KNOB
10	1440398203	FRONT PANEL ASS.	1440409202	FRONT PANEL ASS.
11	1190005040	BLIND SHEET	1190005040	BLIND SHEET
12	4730354019	3×8 CBRTS (2)	4730354019	3×8 CBRTS (2)
13	1440390104	DIAL PANEL	1440390104	DIAL PANEL
14	4510028002	REFLECTOR (B)	4510028002	REFLECTOR (B)
15	2220464000	LAMP BOARD (B)	2220464000	LAMP BOARD (B)
16	2150037031	METER ASS.	2150037031	METER ASS.
17	2150037044	METER ASS.	2150037044	METER ASS.
18	4210163102	TUNING FLY WHEEL ASS.	4210163102	TUNING FLY WHEEL ASS.
19	4120450109	BEARING PLATE	4120450109	BEARING PLATE
20	4753800003	9TW A	4753800003	9TW A
21	4756802008	9N SP	4756802008	9N SP
22	MD-0131J	GUIDE WHEEL	MD-0131J	GUIDE WHEEL
23	SC-1161J	TAPPING SCREW	SC-1161J	TAPPING SCREW
24	4110172206	FRONT CHASSIS	4110172206	FRONT CHASSIS
25	2124126004	LEVER SWITCH	2124126004	LEVER SWITCH
26	4700010008	3×8 CPS (SW)	4700010008	3×8 CPS (SW)
27	2120131006	SPEAKER SWITCH	2120131006	SPEAKER SWITCH
28	4120451001	SPEAKERS BRACKET	4120451001	SPEAKERS BRACKET
29	2048008004	HEADPHONE JACK	2048008004	HEADPHONE JACK
30	1410132004	DIAL SCALE	1410132004	DIAL SCALE
31	4770096007	PUSH RIVET	4770096007	PUSH RIVET
32	4700026005	3×8 CBRTS (2) W	4700026005	3×8 CBRTS (2) W
33	4510027207	REFLECTOR (A)	4510027207	REFLECTOR (A)
34	4120493001	POINTER RAIL	4120493001	POINTER RAIL
35	2220463001	LAMP BOARD	2220463001	LAMP BOARD
36	3930016006	P.L. 8V 0.2A	3930016006	P.L. 8V 0.2A
37	EP-4772	CORD HOLDER	EP-4772	CORD HOLDER
38	ETC-111	TUNER & EQ.AMP.UNIT	ETC-111	TUNER & EQ.AMP.UNIT
39	ETC-112	CONTROL UNIT	ETC-112B	CONTROL UNIT
40	4711303018	3×8 CPS	4711303018	3×8 CPS
41	ETC-113	MIC & TAPE UNIT	—	—
42	4140152005	BLIND	4140152005	BLIND
43	1050225203	BACK PANEL	1050225216	BACK PANEL
44	2050070004	8P. TERMINAL ASS.	2050070004	8P. TERMINAL ASS.
45	2050071016	TERMINAL ASS.	2050071016	TERMINAL ASS.
46	4770018001	WASHER	4770018001	WASHER
47	2062002031	AC CORD WITH PLUG	2062002031	AC CORD WITH PLUG
48	4450020005	CORD BUSH	4450020005	CORD BUSH
49	2311045008	BAR ANT COIL ASS.	2311045008	BAR ANT COIL ASS.
50	2050050008	4P. TERMINAL	2050050008	4P. TERMINAL
51	4120453009	P.C.B. BRACKET (B)	4120453009	P.C.B. BRACKET (B)
52	4140144000	SHIELD COVER	4140144000	SHIELD COVER
53	MD-4429	WIRE CLIP (A)	MD-4429	WIRE CLIP (A)
54	4731801008	4×8 CPTS (2)	4731801008	4×8 CPTS (2)
55	4110173108	BOTTOM CHASSIS	4110173108	BOTTOM CHASSIS
56	1040028012	FOOT	1040028012	FOOT
57	4770052012	FIX SCREW	4770052012	FIX SCREW
58	4150089003	P.C.B. SUPPORT	4150089003	P.C.B. SUPPORT
59	2050088009	4P. EARTH TERMINAL	2050088009	4P. EARTH TERMINAL
60	4739009019	3×6 CPTS (FT)	4739009019	3×6 CPTS (FT)
61	4120480001	TRANSFORMER BRAKET	4120480001	TRANSFORMER BRACKET
62	4734455011	4×10 CTTS (2)	4734455011	4×10 CTTS (2)
63	2020013004	FUSE HOLDER	2020013004	FUSEE HOLDER
64	2061C15058	FUSE (T1.6A)	2061015029	FUSE (T1A)
65	4150133108	INSULATING COVER	4150133108	INSULATING COVER
66	PUS-010	POWER UNIT	—	—
67	4170093008	POWER RADIATOR	—	—
68	4120454105	P.C.B. BRACKET (R)	4120454105	P.C.B. BRACKET (R)
69	4120455104	P.C.B. BRACKET (L)	4120455104	P.C.B. BRACKET (L)
70	2546011001	ELECTROLYTIC CAPACITOR	—	—
71	2335119004	POWER TRANSFORMER	2335120006	POWER TRANSFORMER
72	4753400005	4TW Z	4753400005	4TW Z
73	4520036204	POINTER	4520036204	POINTER
74	CF-7954J2	SPACER	CF-7954J2	SPACER
75	S-2680	TENSION SPRING	S-2680	TENSION SPRING
76	4210159006	DIAL WHEEL	4210159006	DIAL WHEEL
77	4120479009	RADIATOR SUPPORT	4120479009	RADIATOR SUPPORTT
78	5130291069	FUSE LABEL	5130291072	FUSE LABEL
79	4120452107	P.C.B. BRACKET (A)	4120452107	P.C.B. BRACKET (A)
80	—	—	4120462100	STOPPER BRACKET
81	—	—	2650025006	ST-1130H (POWER IC)
82	—	—	—	FIX BRACKET
83	—	—	4730359014	3×16 CBRTS
84	—	—	PUS-011	POWER UNIT
85	—	—	4170095006	POWER RADIATOR

PRINTED CIRCUIT BOARD PATTERNS AND PARTS LIST

GR-345, GR-330 TUNER & EQ. AMP. UNIT ETC-111



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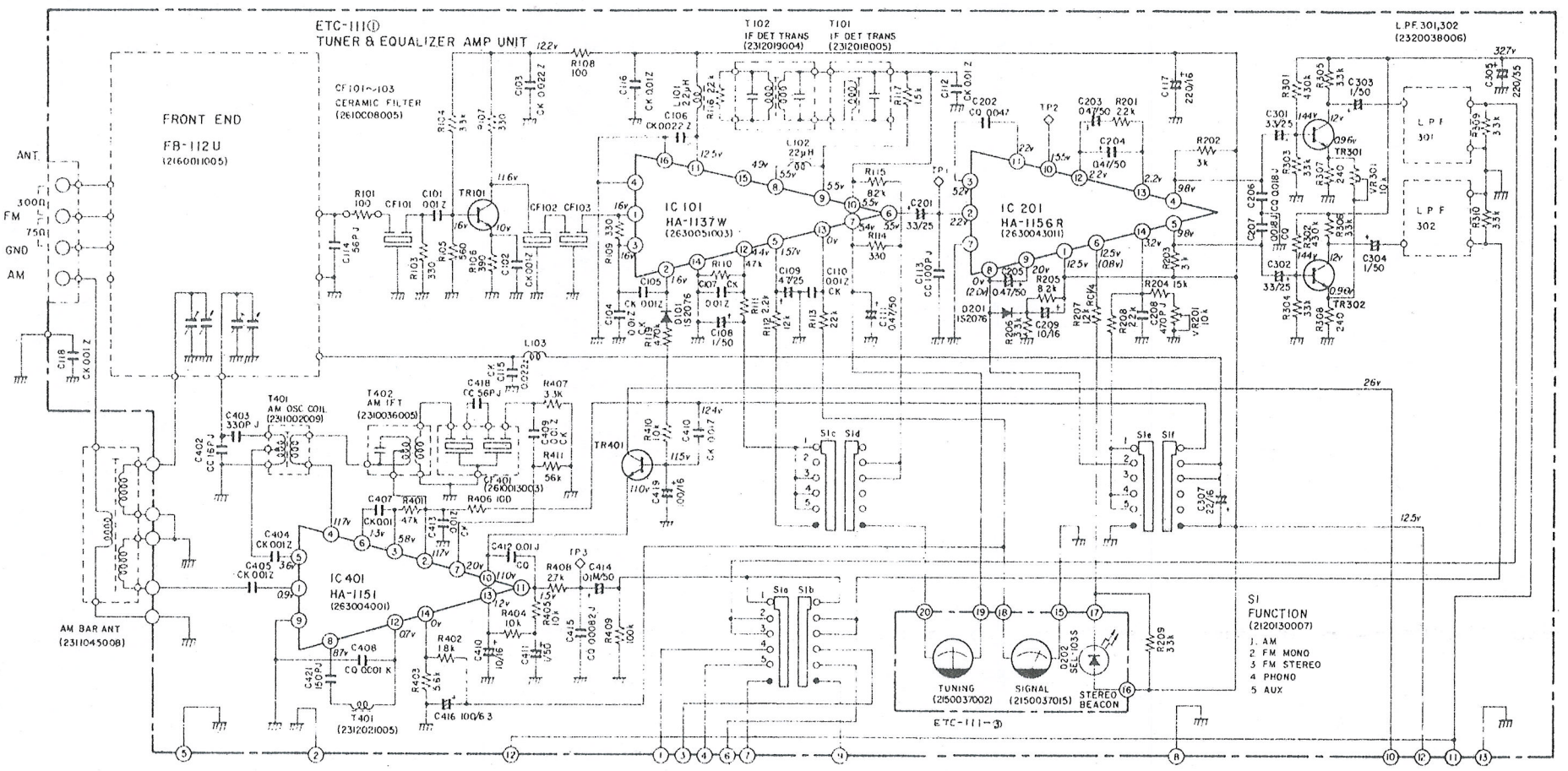
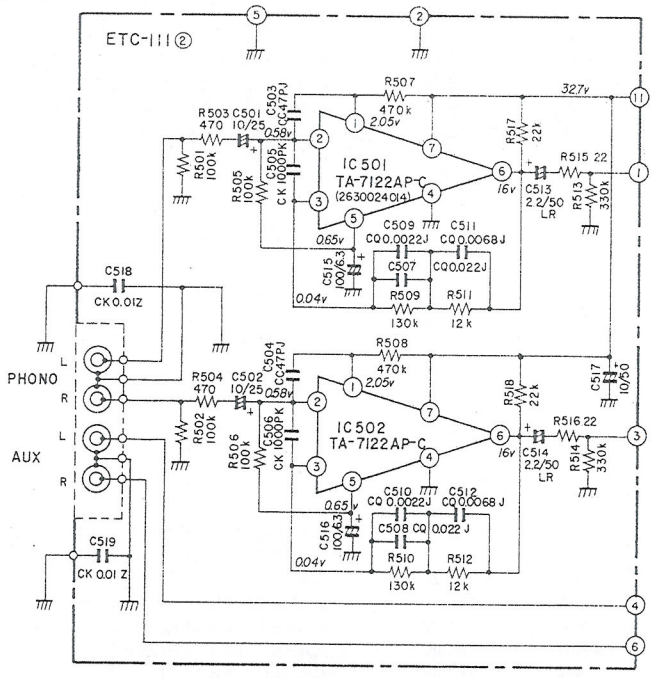


ETC-111-②



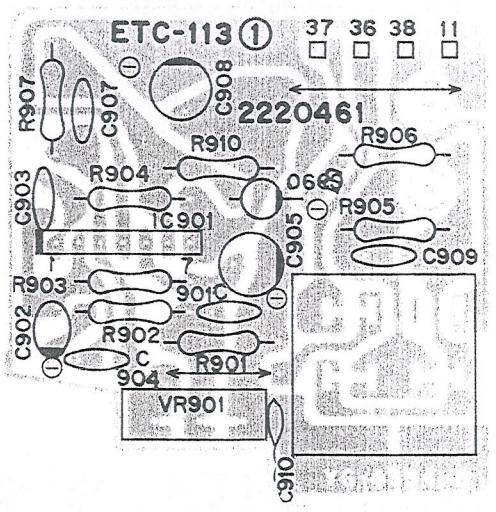
ETC-111 PARTS LIST

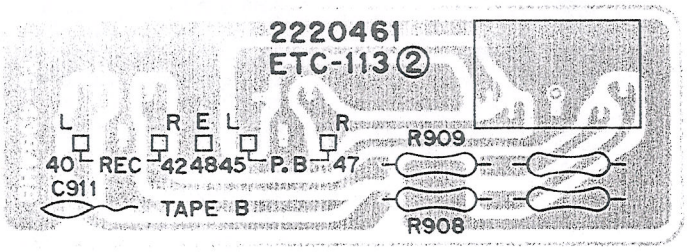
Ref. No.	Part No.	Descriptions			
SEMICONDUCTORS					
TR101	2730025010	2SC461 (B)			TRANSISTOR
TR301, 302	2730171003	2SC1313 (F)			TRANSISTOR
	or 2730171016	2SC1313 (G)			TRANSISTOR
TR401	2730064055	2SC711 (F)			TRANSISTOR
	or 2730064042	2SC711 (E)			TRANSISTOR
IC101	2630051003	HA-1137W			INTEGRATED CIRCUIT
IC201	2630043011	HA-1156R			INTEGRATED CIRCUIT
IC401	2630040001	HA-1151			INTEGRATED CIRCUIT
IC501, 502	2630024014	TA7122AP-C			INTEGRATED CIRCUIT
D101, 201	2760049008	1S2076			DIODE
D202	3939012001	LED (SEL-103S)			DIODE
INDUCTORS					
L101, 103, 402	TRT0565HI	2.2 μH			
L102	2312020006	22 μH			
L401	2312021005	820 μH			
CAPACITORS					
C101, 102, 104, 105, 107, 110, 112, 116, 118, 404, 405, 407, 409, 413, 422, 518, 519	2531024003	10000 pF	+80, −20%	50 V	CERAMIC CAPACITOR
C103, 106, 115	2531025002	22000 pF	+80, −20%	50V	CERAMIC CAPACITOR
C108, 303, 304, 411	2544044009	1 μF		50V	ELECTROLYTIC CAPACITOR
C109	2544024003	4.7 μF		25V	ELECTROLYTIC CAPACITOR
C111, 203, 204, 205	2544043000	0.47 μF		50V	ELECTROLYTIC CAPACITOR
C113	2533627000	100 pF	±5%	50V	CERAMIC CAPACITOR
C114, 418	2533612006	56 pF	±5%	50V	CERAMIC CAPACITOR
C117	2544019005	220 μF		16V	ELECTROLYTIC CAPACITOR
C201, 301, 302	2544023004	3.3 μF		25V	ELECTROLYTIC CAPACITOR
C202	2551080001	0.047 μF	±10%	50V	PLASTIC FILM CAPACITOR
C206, 207	2551121054	0.018 μF	±5%	50V	PLASTIC FILM CAPACITOR
C208	2556091008	470 pF	±5%	50V	PLASTIC FILM CAPACITOR
C209, 410	2544015009	10 μF		16V	ELECTROLYTIC CAPACITOR
C305	2544051005	220 μF		50V	ELECTROLYTIC CAPACITOR
C307	2544054002	22 μF		16V	ELECTROLYTIC CAPACITOR
C401	2533595006	2	±0.25 pF	50V	CERAMIC CAPACITOR

ETC-111 (Con.)

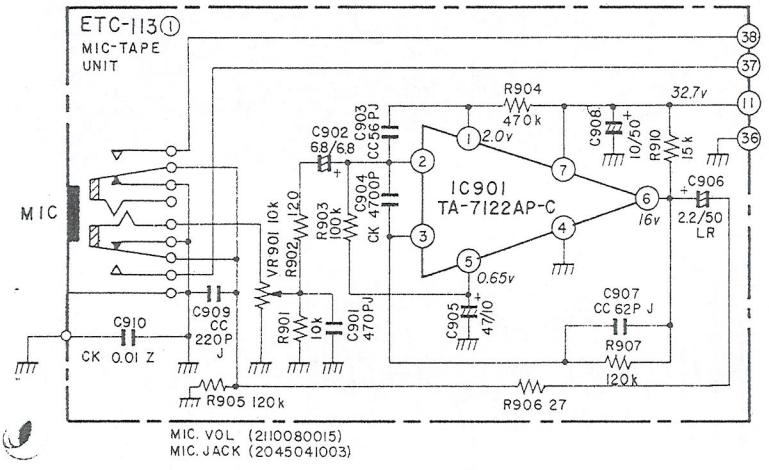
Ref. No.	Part. No.	Descriptions			
C402	2533608003	16 pF	±5%	50V	CERAMIC CAPACITOR
C403	2556087009	330 pF	±5%	50V	PLASTIC FILM CAPACITOR
C408	2551060005	0.001 μF	±10%	50V	PLASTIC FILM CAPACITOR
C412	2551072006	0.01 μF	±10%	50V	PLASTIC FILM CAPACITOR
C414	2549014005	0.1 μF	±20%	50V	ELECTROLYTIC CAPACITOR
C415	2551120068	0.0033 μF	±5%	50V	PLASTIC FILM CAPACITOR
C416, 515, 516	2544003008	100 μF		6.3V	ELECTROLYTIC CAPACITOR
C419	2544018006	100 μF		16V	ELECTROLYTIC CAPACITOR
C421	2533631009	150 pF	±5%	50V	CERAMIC CAPACITOR
C501, 502	2544025002	100 μF		25V	ELECTROLYTIC CAPACITOR
C503, 504	2533619005	47 pF	±5%	50V	CERAMIC CAPACITOR
C505, 506	2531004007	1000 pF	±10%	50V	CERAMIC CAPACITOR
C507, 508	2551121067	0.022 μF	±5%	50V	PLASTIC FILM CAPACITOR
C509, 510	2551120042	0.0022 μF	±5%	50V	PLASTIC FILM CAPACITOR
C511, 512	2551121009	0.0068 μF	±5%	50V	PLASTIC FILM CAPACITOR
C513, 514	2549011011	2.2 μF		50V	ELECTROLYTIC CAPACITOR
C517	2544047006	10 μF		50V	ELECTROLYTIC CAPACITOR
RESISTORS					
R101, 108, 406	2410290000	100 ohm	±5%	1/4 W	CARBON FILM RESISTOR
R103, 107, 109, 114	2410302008	330 ohm	±5%	1/4 W	CARBON FILM RESISTOR
R104, 206, 209, 305, 306 309, 310, 407	2410326000	3.3 kohm	±5%	1/4 W	CARBON FILM RESISTOR
R105	2410308002	56 ohm	±5%	1/4 W	CARBON FILM RESISTOR
R106	2410304006	390 ohm	±5%	1/4 W	CARBON FILM RESISTOR
R110	2410354001	47 kohm	±5%	1/4 W	CARBON FILM RESISTOR
R111, 116, 201, 208	2410324002	2.2 kohm	±5%	1/4 W	CARBON FILM RESISTOR
R112, 511, 512	2410340002	12 kohm	±5%	1/4 W	CARBON FILM RESISTOR
R113, 517, 518	2410346006	22 kohm	±5%	1/4 W	CARBON FILM RESISTOR
R115, 205	2410336003	82 kohm	±5%	1/4 W	CARBON FILM RESISTOR
R117, 204	2410342000	15 kohm	±5%	1/4 W	CARBON FILM RESISTOR
R119, 507, 508	2410378003	470 kohm	±5%	1/4 W	CARBON FILM RESISTOR
R202, 203	2410325001	3 kohm	±5%	1/4 W	CARBON FILM RESISTOR
R207	2420156008	1.2 kohm	±10%	1/4 W	CARBON COMPOSITION RESISTOR
R301, 302	2410377004	430 kohm	±5%	1/4 W	CARBON FILM RESISTOR
R303, 304	2410350005	33 kohm	±5%	1/4 W	CARBON FILM RESISTOR
R307, 308	2410299001	240 ohm	±5%	1/4 W	CARBON FILM RESISTOR
R401	2410330009	4.7 kohm	±5%	1/4 W	CARBONN FILM RESISTOR
R402	2410320006	1.8 kohm	±5%	1/4 W	CARBON FILM RESISTOR
R403	2410332007	5.6 kohm	±5%	1/4 W	CARBON FILM RESISTOR
R404, 405, 410	2410338001	10 kohm	±5%	1/4 W	CARBON FILM RESISTOR
R408	2410324002	2.7 kohm	±5%	1/4 W	CARBON FILM RESISTOR
R409, 501, 502, 505, 506	2410362006	100 kohm	±5%	1/4 W	CARBON FILM RESISTOR
R411	2410356009	56 kohm	±5%	1/4 W	CARBON FILM RESISTOR
R503, 504	2410306004	470 ohm	±5%	1/4 W	CARBON FILM RESISTOR
R509, 510	2410365003	130 kohm	±5%	1/4 W	CARBON FILM RESISTOR
R513, 514	2410374007	330 kohm	±5%	1/4 W	CARBON FILM RESISTOR
R515, 516	2410274000	22 ohm	±5%	1/4 W	CARBON FILM RESISTOR
OTHER PARTS					
VR 201, 301	EP-74015	V10 PB103			POTENTIOMETER
T101	2312018005	IF DET TRANSFORMER (A)			
T102	2312019004	IF DET TRANSFORMER (B)			
T401	2311002009	AC OSC COIL			
T402	2310036005	AM IFT			
CF101, 102, 103	2610008005	CERAMIC FILTER (10.7 MHz)			
CF401	2610013003	CERAMIC FILTER (455 kHz)			
LPF301, 302	2320038006	L.P.F.			
S1a – f	2120130007	FUNCTION SWITCH			
	2160011005	FRONT END			
	2048007005	1P.PIN JACK			
	4210159006	DIAL WHEEL			
	4430182002	LED HOLDER			

GR-345, MIC & TAPE UNIT ETC-113

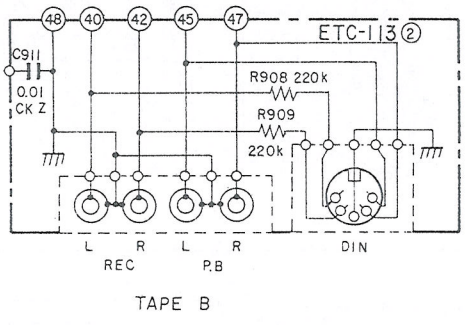




ETC-113- ①



ETC-113- ②



TAPE B

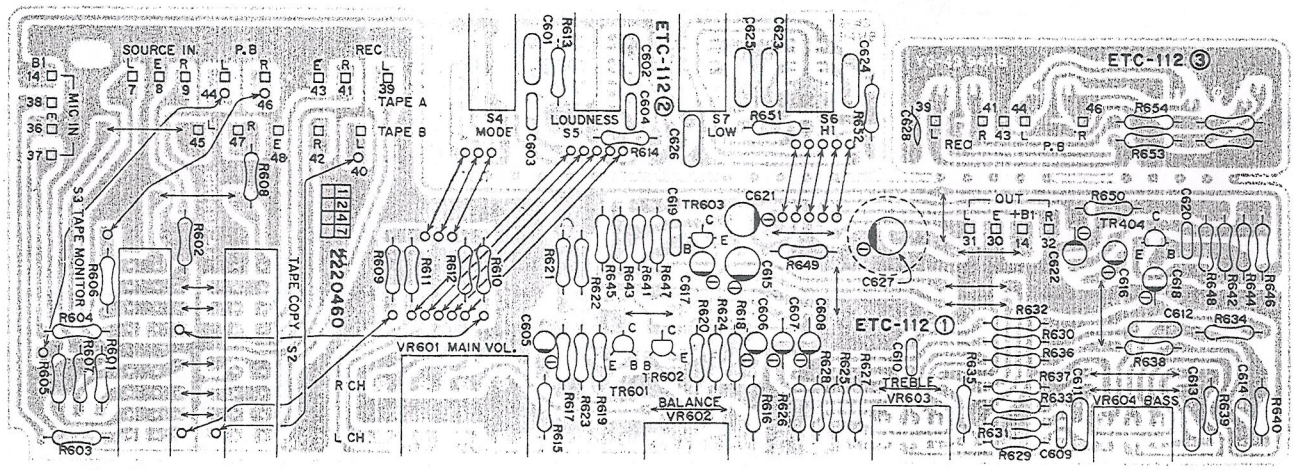
ETC-113 PARTS LIST

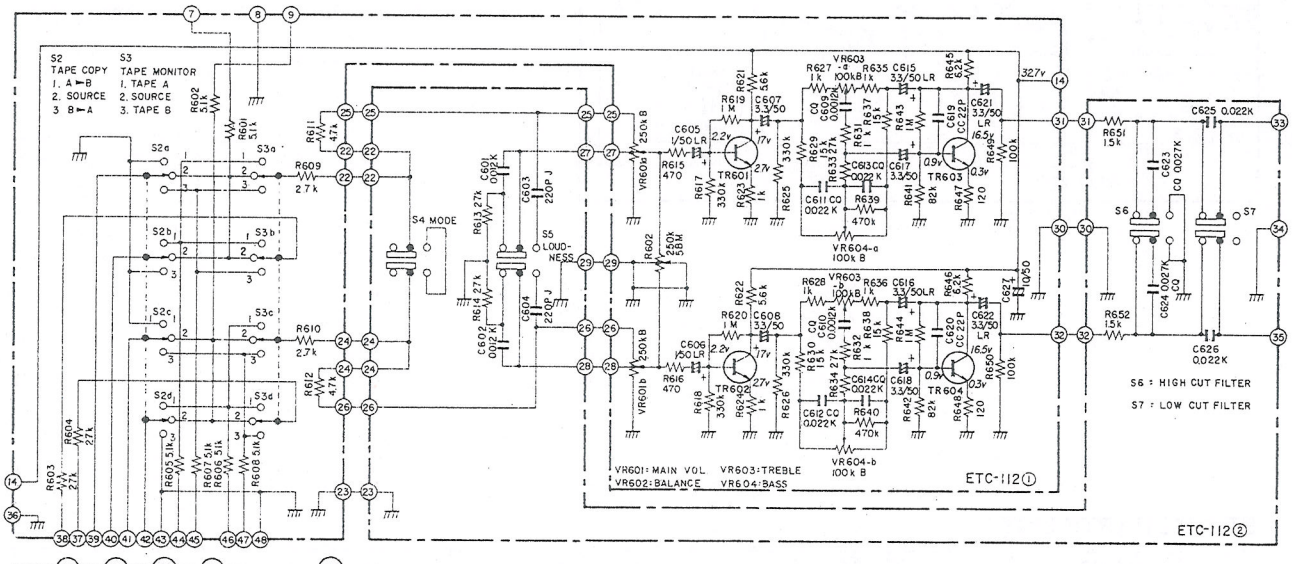
Ref. No.	Part No.	Descriptions			
SEMICONDUCTORS					
IC901	2630024014	TA-7122AP-C			INTEGRATED CIRCUIT
CAPACITORS					
C901	2533643000	470 pF	±5%	50V	CERAMIC CAPACITOR
C902	2541002002	6.8 μF	±20%	6.3V	TANTALUM SOLID CAPACITOR
C903	2533621006	56 pF	±5%	50V	CERAMIC CAPACITOR
C904	2531023004	4700 pF	+80%, −20%	50V	CERAMIC CAPACITOR
C905	2544009002	47 μF		10V	ELECTROLYTIC CAPACITOR
C906	2549011011	2.2 μF		50V	ELECTROLYTIC CAPACITOR
C907	2533622005	62 pF	±5%	50V	CERAMIC CAPACITOR
C908	2544047006	10 μF		50V	ELECTROLYTIC CAPACITOR
C909	2533635005	220 pF	±5%	50V	CERAMIC CAPACITOR
C910, 911	2531024003	10000 pF	+80, −20%	50V	CERAMIC CAPACITOR

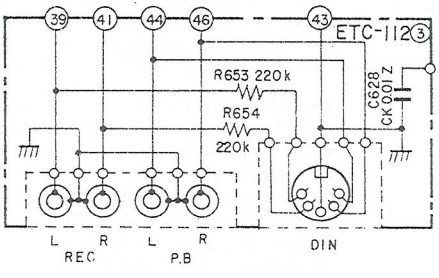
ETC-113 (Con.)

Ref No.	Part No.	Descriptions			
RESISTORS					
R901	2410338001	10 kohm	±5%	1/4 W	CARBON FILM RESISTOR
R902	2410292008	120 ohm	±5%	1/4 W	CARBON FILM RESISTOR
R903	2410362006	100 kohm	±5%	1/4 W	CARBON FILM RESISTOR
R904, 908, 909	2410378003	470 kohm	±5%	1/4 W	CARBON FILM RESISTOR
R905, 907	2410364004	120 kohm	±5%	1/4 W	CARBON FILM RESISTOR
R906	2410276008	27 ohm	±5%	1/4 W	CARBON FILM RESISTOR
R908	2410342000	15 kohm	±5%	1/4 W	CARBON FILM RESISTOR
OTHER PARTS					
VR901	2110080015	V16 V25 KB103			POTENTIOMETER
	2048041003	MIC JACK			
	2048021007	4P. CONNECTOR BASE			
	2048026002	5P. DIN JACK			
	2050003107	3T. LUG			

GR-345, GR-330 CONTROL UNIT ETC-112, ETC-112B





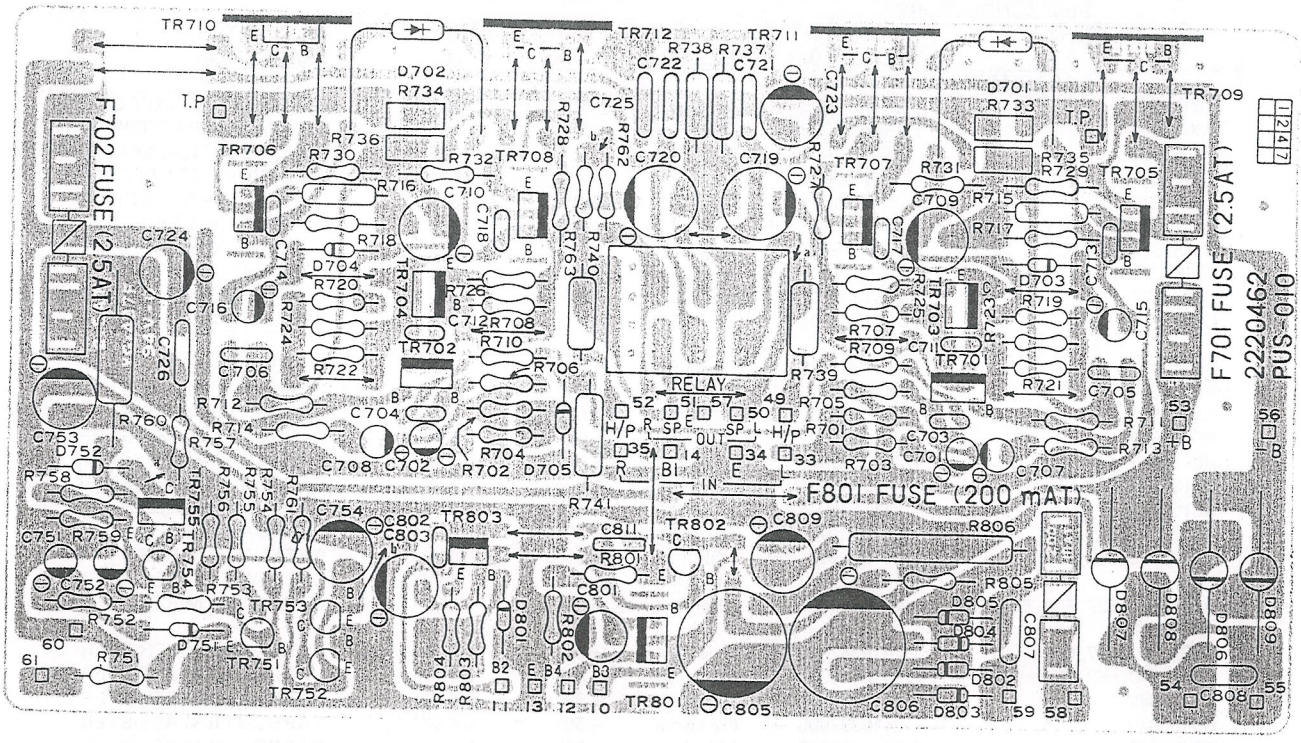


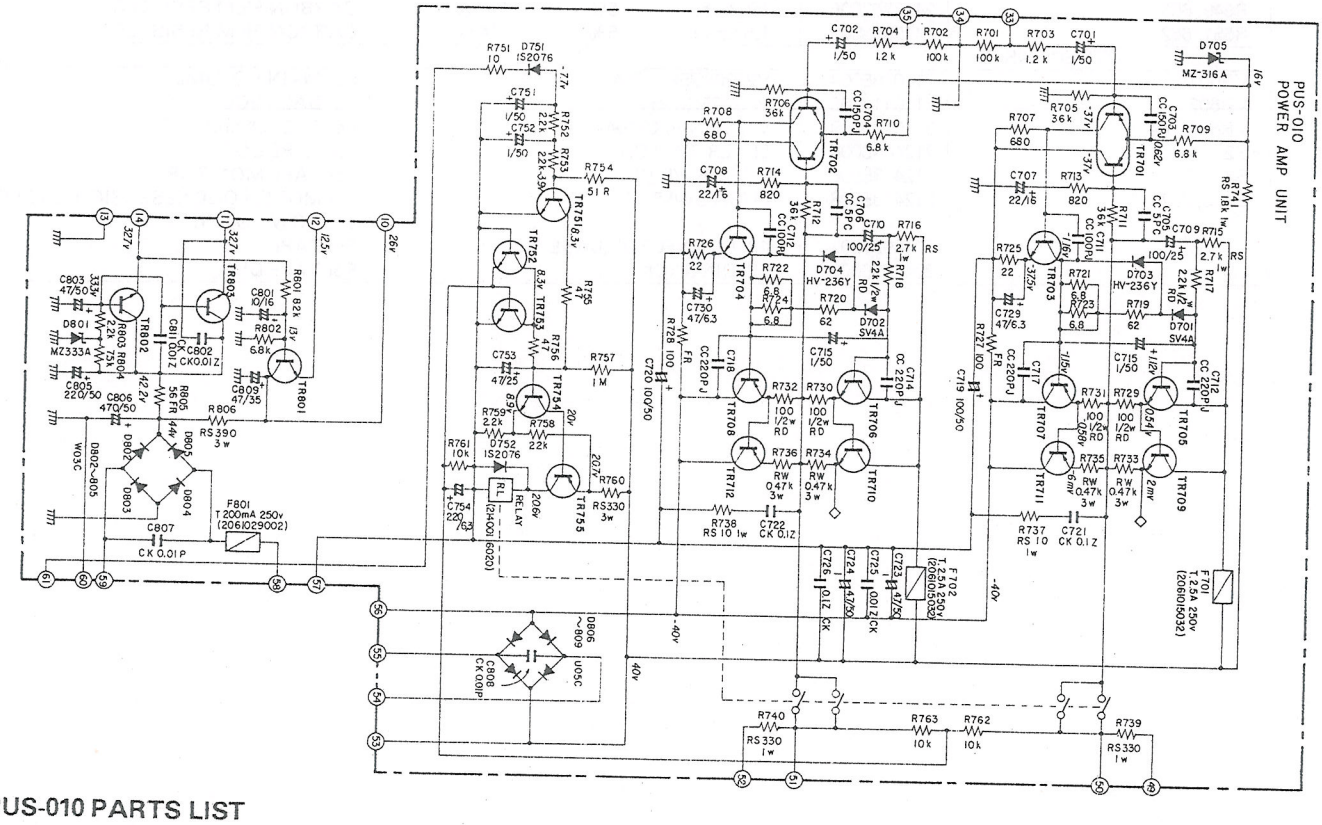
ETC-112 (GR-345), ETC-112B (GR-330) PARTS LIST

Marked (•) indicates parts only used in ETC-112

Ref. No.	Part No.	Descriptions			
SEMICONDUCTORS					
TR601, 602, 603, 604	2730171016 or 2730171003	2SC1313 (G) 2SC1313 (F)			TRANSISTOR TRANSISTOR
CAPACITORS					
C601, 602	2551073005	0.012 μF	± 10%	50V	PLASTIC FILM CAPACITOR
C603, 604	2533635005	220 pF	± 5%	50V	CERAMIC CAPACITOR
C605, 606	2549011008	1 μF		50V	ELECTROLYTIC CAPACITOR
C607, 608, 617, 618	2544045008	3.3 μF		50V	ELECTROLYTIC CAPACITOR
C609, 610	2531004007	1000 pF	± 10%	50V	CERAMIC CAPACITOR
C611, 612, 613, 614, 625, 626	2551076002	0.022 μF	± 10%	50V	PLASTIC FILM CAPACITOR
C615, 616, 621, 622	2549013006	3.3 μF		50V	ELECTROLYTIC CAPACITOR
C619, 620	2533611003	22 pF	± 5%	50V	CERAMIC CAPACITOR
C623, 624	2551077001	0.027 μF	± 10%	50V	PLASTIC FILM CAPACITOR
C627	2544047006	10 μF		50V	CERAMIC CAPACITOR
RESISTORS					
R601, 602, 607, 608	2410331008	5.1 kohm	± 5%	1/4 W	CARBON FILM RESISTOR
• R603, 604	2410348004	27 kohm	± 5%	1/4 W	CARBON FILM RESISTOR
• R605, 606	2410331008	5.1 kohm	± 5%	1/4 W	CARBON FILM RESISTOR
R609, 610	2410324002	2.7 kohm	± 5%	1/4 W	CARBON FILM RESISTOR
R611, 612	2410330009	4.7 kohm	± 5%	1/4 W	CARBON FILM RESISTOR
R613, 614, 633, 634	2410348004	2.7 kohm	± 5%	1/4 W	CARBON FILM RESISTOR
R615, 616	2410306004	470 ohm	± 5%	1/4 W	CARBON FILM RESISTOR
R617, 618, 625, 626	2410374007	330 kohm	± 5%	1/4 W	CARBON FILM RESISTER
R619, 620, 643, 644	2410765001	1 Mohm	± 5%	1/4 W	CARBON FILM RESISTER
R621, 622	2410332007	5.6 kohm	± 5%	1/4 W	CARBON FILM RESISTER
R623, 624, 627, 628, 631, 632, 635, 636	2410314009	1 kohm	± 5%	1/4 W	CARBON FILM RESISTER
R629, 630, 637, 638	2410342000	15 kohm	± 5%	1/4 W	CARBON FILM RESISTER
R639, 640, 653, 654	2410378003	470 kohm	± 5%	1/4 W	CARBON FILM RESISTER
R641, 642	2410360008	82 kohm	± 5%	1/4 W	CARBON FILM RESISTER
R645, 646	2410333006	6.2 kohm	± 5%	1/4 W	CARBON FILM RESISTER
R647, 648	2410292008	120 ohm	± 5%	1/4 W	CARBON FILM RESISTER
R649, 650	2410362006	100 kohm	± 5%	1/4 W	CARBON FILM RESISTER
R651, 652	2410318005	1.5 kohm	± 5%	1/4 W	CARBON FILM RESISTER
OTHER PARTS					
VR601	2110185004	V2420V25K = 254			For MAIN VOLUME
VR602	2110117108	V16V25KS254T			For BALANCE
VR603, 604	2110135009	V16V20V25KB104-			For TREBLE and BASS
• S2	2124045004	LEVER SWITCH			For TAPE COPY
S3	2124135008	PUSH SWITCH			For TAPE MONITOR
S4, 5, 6, 7	2124135008	PUSH SWITCH			For MODE, LOUDNESS, HIGH CUT FILTER and LOW CUT FILTER
	2048021007	4P. CONNECTOR BASE			For TAPE
	2048026002	5P. DIN JACK			For TAPE DIN

GR-345 POWER AMP. UNIT PUS-010





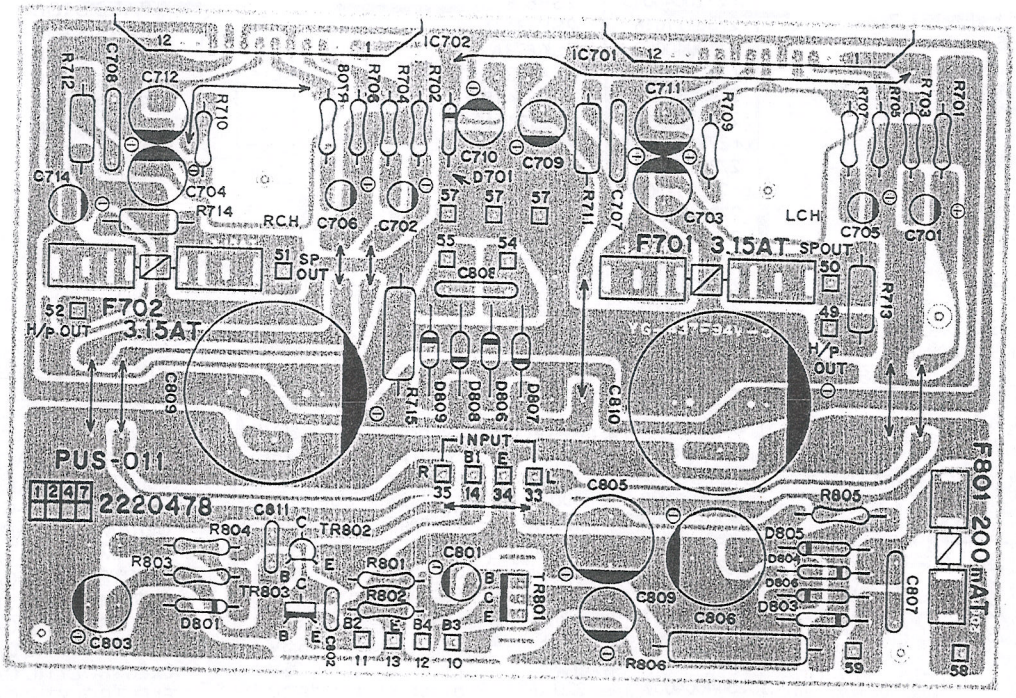
PUS-010 PARTS LIST

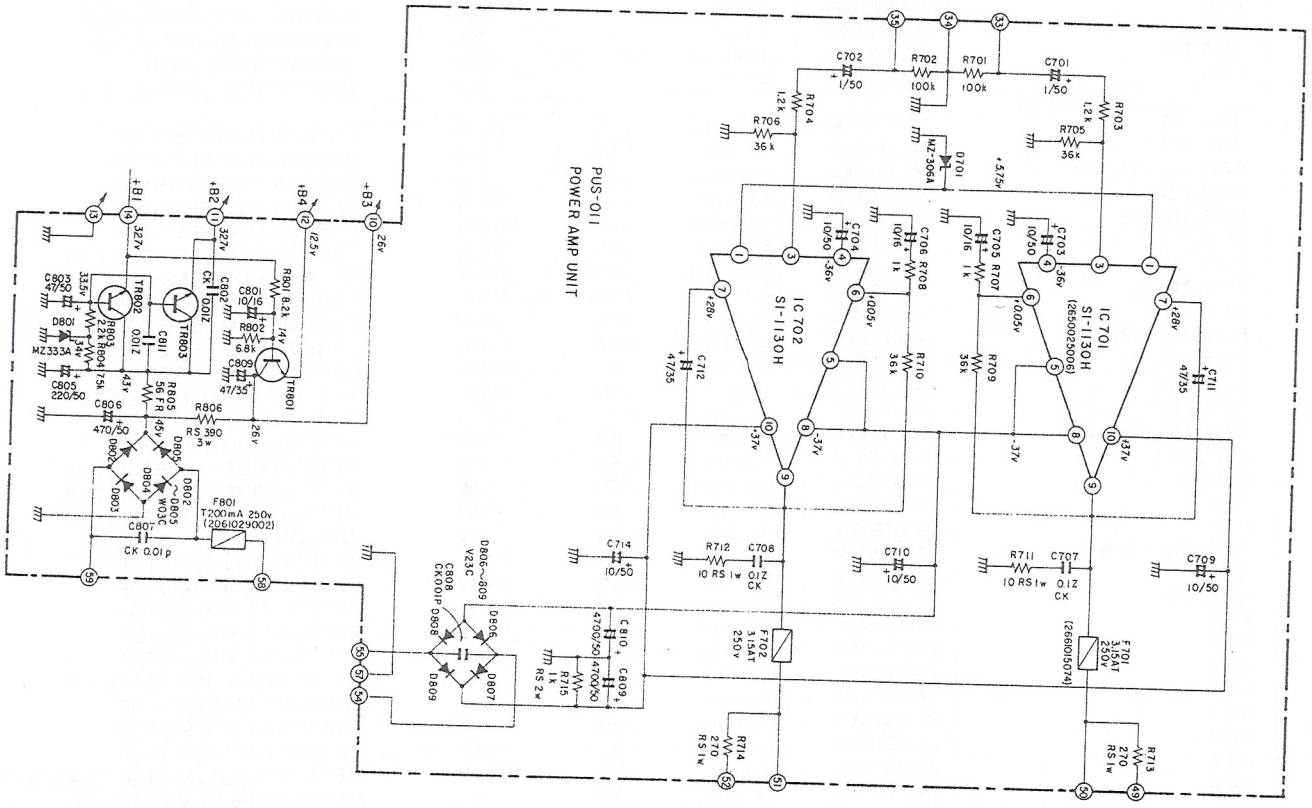
Ref. No.	Part No.	Descriptions	
SEMICONDUCTORS			
TR701, 702	2710098009	2SA979 (G)	TRANSISTOR
	or 2710098012	2SA979 (F)	TRANSISTOR
TR703, 704	2730186001	2SC1940 (L)	TRANSISTOR
TE705, 706	2740059018	2SD357 (E)	TRANSISTOR
	or 2720059005	2SD357 (D)	TRANSISTOR
TR707, 708	2720040018	2SB527 (E)	TRANSISTOR
	or 2720040005	2SB527 (D)	TRANSISTOR
TR709, 710	2740063004	2SD588 (R)	TRANSISTOR
	or 2740063017	2SD588 (S)	TRANSISTOR

ETC-010 (Con.)

Ref No.	Part No.	Descriptions			
TR711, 712	2720045000	2SB618 (R)			TRANSISTOR
	or 2720045013	2SB618 (S)			TRANSISTOR
TR751, 752, 753, 754	2730171016	2SC1313 (G)			TRANSISTOR
TR755	2710040057	2SA673A (C)			TRANSISTOR
	or 2710040044	2SA673A (B)			TRANSISTOR
TR801	2740035003	2SD234 (R)			TRANSISTOR
TR802	2730178019	2SC1740 (S)			TRANSISTOR
	or 2730178006	2SC1740 (R)			TRANSISTOR
TR803	2730112020	2SC1214 (D)			TRANSISTOR
	or 2730112017	2SC1214 (C)			TRANSISTOR
D701, 702	2760186000	SV-4A			DIODE
D703, 704	2760171028	HV23G YL			DIODE
D705	2760180019	MZ-316A			DIODE
D751, 752	2760049008	1S2076			DIODE
D801	2760229001	MZ-333A			DIODE
D802, 803, 804, 805	2760191008	WO3C			DIODE
D806, 807, 808, 809	2760113002	U05C			DIODE
CAPACITORS					
C701, 702, 715, 716, 751, 752	2544044009	1 μF		50V	ELECTROLYTIC CAPACITOR
C703, 704	2533631009	150 pF	±5%	50V	CERAMIC CAPACITOR
C705, 706	2533598003	5	±0.5 pF	50V	CERAMIC CAPACITOR
C707, 708	2544054002	22 μF		16V	ELECTROLYTIC CAPACITOR
C709, 710	2544028009	100 μF		25V	ELECTROLYTIC CAPACITOR
C711, 712	2533627000	100 pF	±5%	50V	CERAMIC CAPACITOR
C713, 714, 717, 718	2533635005	220 pF	±5%	50V	CERAMIC CAPACITOR
C719, 720	2544050006	100 μF		50V	ELECTROLYTIC CAPACITOR
C721, 722, 725, 726	2531027000	100000 pF	+80, −20%	50V	CERAMIC CAPACITOR
C723, 724	2544046007	4.7 μF		50V	ELECTROLYTIC CAPACITOR
C729, 730	2544002009	47 μF		6.3V	ELECTROLYTIC CAPACITOR
C753	2544027000	47 μF		25V	ELECTROLYTIC CAPACITOR
C754	2544004007	220 μF		6.3V	ELECTROLYTIC CAPACITOR
C801	2544015009	10 μF		16V	ELECTROLYTIC CAPACITOR
C802, 809	2531024003	10000 pF	+80, −20%	50V	CERAMIC CAPACITOR
C803	2544049004	47 μF		50V	ELECTROLYTIC CAPACITOR
C805	2544051005	220 μF		50V	ELECTROLYTIC CAPACITOR
C806	2544053003	470 μF		50V	ELECTROLYTIC CAPACITOR
C807, 808	2531053003	10000 pF	+100, −0%	500V	CERAMIC CAPACITOR
C809	2544037003	47 μF		35V	ELECTROLYTIC CAPACITOR
RESISTORS					
R701, 702	2410362006	100 kohm	±5%	1/4 W	CARBON FILM RESISTOR
R703, 704	2410316007	1.2 kohm	±5%	1/4 W	CARBON FILM RESISTOR
R705, 706, 711, 712	2410351004	36 kohm	±5%	1/4 W	CARBON FILM RESISTOR
R707, 708	2410310003	680 ohm	±5%	1/4 W	CARBON FILM RESISTOR
R709, 710, 802	2410334005	6.8 kohm	±5%	1/4 W	CARBON FILM RESISTOR
R713, 714	2410312001	820 ohm	±5%	1/4 W	CARBON FILM RESISTOR
R715, 716	2440046004	2.7 kohm	±5%	1/4 W	METAL OXIDE FILM RESISTOR
R717, 718	2410193000	2.2 kohm	±5%	1/4 W	CARBON FILM RESISTOR
R719, 720	2410285002	62 ohm	±5%	1/4 W	CARBON FILM RESISTOR
R721, 722, 723, 724	2410262009	6.8 ohm	±5%	1/4 W	CARBON FILM RESISTOR
R725, 726	2410274000	22 ohm	±5%	1/4 W	CARBON FILM RESISTER
R727, 728	2442007038	100 ohm	±5%	1/4 W	METAL OXIDE FILM RESISTOR
R729, 730, 731, 732	2410161003	100 ohm	±5%	1/2 W	CARBON FILM RESISTOR
R733, 734, 735, 736	2430032002	0.47 ohm	±10%	3W	WIRE WOUND RESISTOR
R737, 738	2440017004	10 ohm	±5%	1W	METAL OXIDE FILM RESISTOR
R739, 740	2440035002	330 ohm	±5%	1W	METAL OXIDE FILM RESISTOR
R741	2440044006	1.8 kohm	±5%	1W	METAL OXIDE FILM RESISTOR
R751	2410266005	10 ohm	±5%	1/4 W	CARBON FILM RESISTOR
R752, 753, 759, 803	2410322004	2.2 kohm	±5%	1/4 W	CARBON FILM RESISTOR
R754	2410355000	51 kohm	±5%	1/4 W	CARBON FILM RESISTOR
R755, 756	2410282005	47 ohm	±5%	1/4 W	CARBON FILM RESISTOR
R757	2410765001	1 Mohm	±5%	1/4 W	CARBON FILM RESISTER
R758	2410346006	22 kohm	±5%	1/4 W	CARBON FILM RESISTER
R760	2440147000	330 ohm	±5%	3W	METAL OXIDE FILM RESISTOR
R761, 762, 763	2410338001	10 kohm	±5%	1/4 W	CARBON FILM RESISTOR
R801	2410336003	8.2 kohm	±5%	1/4 W	CARBON FILM RESISTOR
R804	2410335004	7.5 kohm	±5%	1/4 W	CARBON FILM RESISTOR
R805	2442007054	56 ohm	±5%	1/4 W	METAL OXIDE FILM RESISTOR
R806	2440148009	390 ohm	±5%	3W	METAL OXIDE FILM RESISTOR
OTHER PARTS					
F701, 702	2061015032	FUSE			2.5AT
F801	2061029002	FUSE			200 mAT
	2020014003	FUSE CLIP			
	2140016020	RELAY			
	4170093001	POWER RADIATOR			
	4120455007	P.C.B. BRACKET (L)			
	4120454008	P.C.B. BRACKET (R)			
	4120456006	SUPPORT BRACKET			
	MD-4982	LEAD CLIP			

GR-330 POWER AMP. UNIT PUS-011





PUS-011 PARTS LIST

Ref.No	Part No.	Descriptions			
SEMICONDUCTORS					
TR801	2740035003	2SD234 (R)			TRANSISTOR
TR802	2730178019	2SC1740 (S)			TRANSISTOR
TR803	2730112020	2SC1214 (D)			TRANSISTOR
IC701, 702	2650025006	ST-1130H			INTEGRATED CIRCUIT
D701	2760177019	MZ-307A			DIODE
D801	2760229001	MZ-333A			DIODE
D802, 803, 804, 805	2760191008	W03C			DIODE
D806, 807, 808, 809	2760223002	V23C			DIODE
CAPACITORS					
C701, 702	2544044009	1 μF		50V	ELECTROLYTIC CAPACITOR
C703, 704, 709, 710, 714	2544047006	10 μF		50V	ELECTROLYTIC CAPACITOR
C705, 706, 801	2544015009	10 μF		16V	ELECTROLYTIC CAPACITOR
C707, 708	2531027000	100000 pF	+80, −20%	50V	CERAMIC CAPACITOR
C711, 712	2544027000	47 μF		25V	ELECTROLYTIC CAPACITOR
C802, 811	2531024003	10000 pF	+80, −20%	50V	CERAMIC CAPACITOR
C803	2544049004	47 μF		50V	ELECTROLYTIC CAPACITOR
C805	2544051005	220 μF		50V	ELECTROLYTIC CAPACITOR
C806	2544053003	470 μF		50V	ELECTROLYTIC CAPACITOR
C807, 808	2531053003	10000 pF	+100, −0%	500V	CERAMIC CAPACITOR
C809, 810	2546030008	4700 μF		50V	ELECTROLYTIC CAPACITOR
C809	2544037003	47 μF		35V	ELECTROLYTIC CAPACITOR
RESISTORS					
R701, 702	2410362006	100 kohm	±5%	1/4 W	CARBON FILM RESISTOR
R703, 704	2410316007	1.2 koh	±5%	1/4 W	CARBON FILM RESISTOR
R705, 706, 709, 710	2410351004	36 kohhm	±5%	1/4 W	CARBON FILM RESISTER
R707, 708	2410314009	1 kohm	±5%	1/4 W	CARBON FILM RESISTER
R711, 712	2440017004	10 ohm	±5%	1 W	METAL OXIDE FILM RESISTOR
R713, 714	2440034003	270 ohm	±5%	1 W	METAL OXIDE FILM RESISTOR
R715	2440098007	1 kohm	±5%	2 W	METAL OXIDE FILM RESISTOR
R801	2410336003	8.2 kohm	±5%	1/4 W	CARBON FILM RESISTOR
R802	2410334005	6.8 kohm	±5%	1/4 W	CARBON FILM RESISTOR
R803	2410322004	2.2 kohm	±5%	1/4 W	CARBON FILM RESISTOR
R804	2410335004	7.5 kohm	±5%	1/4 W	CARBON FILM RESISTOR
R805	2442007054	56 ohm	±5%	1/4 W	METAL OXIDE FILM RESISTOR
R806	2440148009	390 ohm	±5%	3 W	METAL OXIDE FILM RESISTOR
OTHER PARTS					
F701, 702	2061015074	FUSE (3.15 AT)			
F801	2061029002	FUSE (200 m AT)			
	2020014003	FUSE CLIP			
	4120455104	P.C.B. BRACKET (L)			
	4120454105	P.C.B. BRACKET (R)			
	4170095006	POWER RADIATOR			
	MD-4982	LEAD CLAMP			

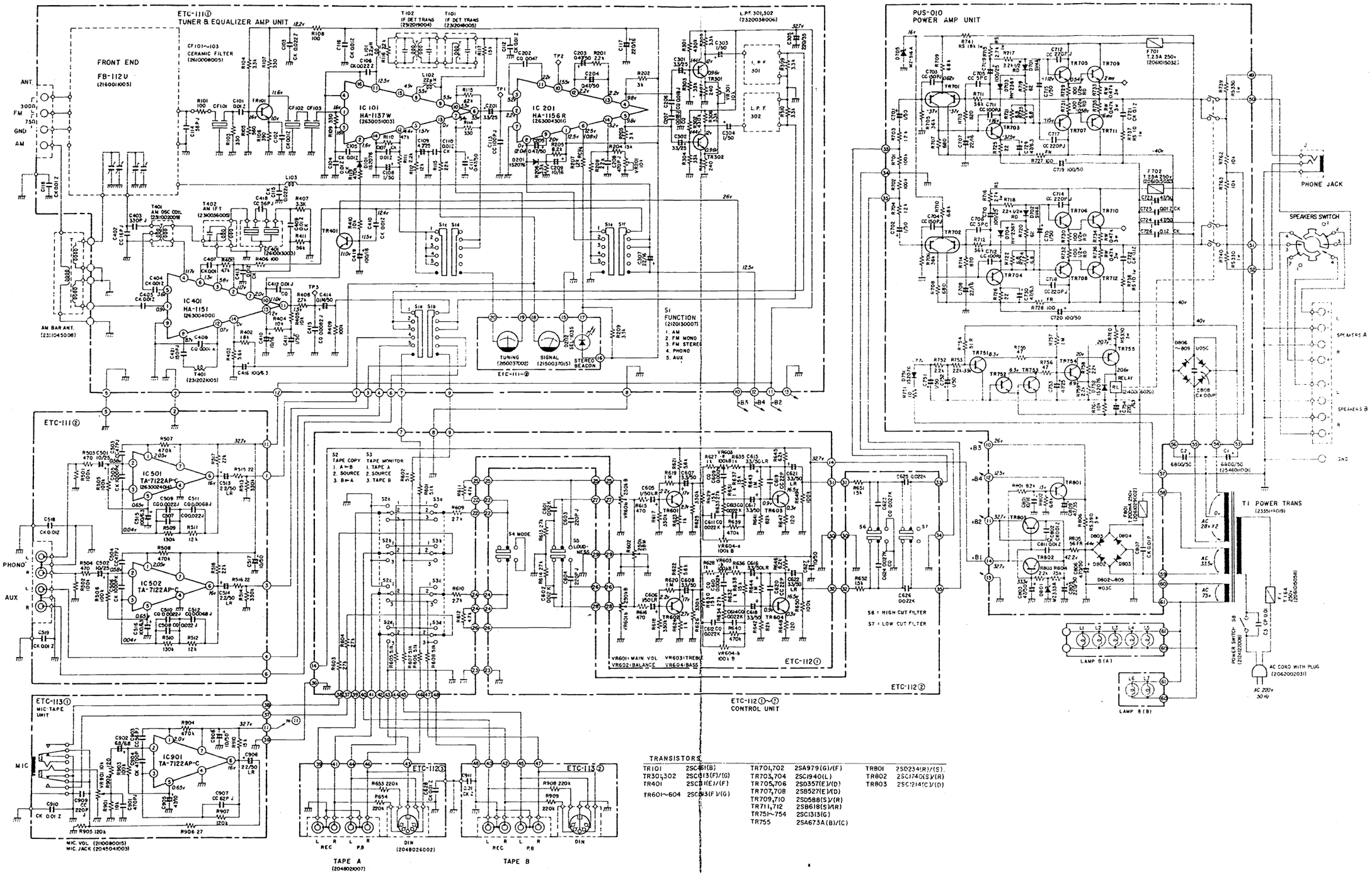
CHASSIS AND CABINET GROUP PARTS LIST

Part No.	Descriptions	
1440390104	DIAL PANEL	
4510028002	REFLECTOR (B)	
4610103005	RUBBER SHEET	
4610103018	RUBBER SHEET	
2220464000	LAMP BOARD (B)	
3930016006	PILOT LAMP	8V 0.2A
2150037031	METER ASS.	For TUNING
1410130006	METER PLATE	For TUNING
2150037044	METER ASS.	For SIGNAL
1410131005	METER PLATE	For SIGNAL
4210136005	TUNING FLY WHEEL ASS.	
4220145000	DRIVING SHAFT	
4250102000	BEARING	
4210137002	FLY WHEEL	
4210104006	STRING SHAFT	
4770089001	WASHER	
4120450109	BEARING PLATE	
MD-0131J	GUIDE WHEEL	
SC-1161J	TAPPING SCREW	
4110172206	FRONT CHASSIS	
2124126004	LEVER SWITCH	
4450033005	WIRE CLAMP BAND	
2120131006	SPEAKERS SWITCH	
4120451001	SPEAKERS BRACKET	

CHASSIS AND CABINET GROUP (Con.)

Part No.	Descriptions	
4450033005	WIRE CLAMP BAND	
2048008004	HEADPHONE JACK	
1410132004	DIAL SCALE	
4770096007	PUSH RIVET	
4510027207	REFLECTOR (A)	
4120493001	POINTER RAIL	
2220463001	LAMP BOARD (A)	
EP-4772	CORD HOLDER	
ETC-111-3	TUNER & EQ. AMP. UNIT	
4770096007	PUSH RIVET	
ETC-112-1	CONTROL UNIT (1)	
4120462100	STOPPER BRACKET	For GR-330
ETC-113-1	MIC & TAPE UNIT (1)	For GR-345
ETC-112-2	CONTROL UNIT (2)	
4140152005	BLIND	
1050225106	BACK PANEL	For GR-345
1050225119	BACK PANEL	For GR-330
2050070004	8P. TERMINAL ASS.	
4770064107	FIXING SCREW	
2050071016	TERMINAL ASS.	
4770018001	WASHER	
2062002031	AC CORD WITH PLUG	
4450020005	CORD BUSH	
2311045008	BAR ANTENNA COIL ASS.	
2050050008	4P. TERMINAL	
4770064107	FIXING SCREW	
ETC-111-2	TUNER & EQ. AMP. UNIT	
4120453009	P.C.B. BRACKET (B)	
4140144000	SHIELD COVER	
MD-4229	WIRE CLIP (A)	
ETC-112-3	CONTROL UNIT (3)	
ETC-113-2	MIC & TAPE UNIT	For GR-345
4110173108	BOTTOM CHASSIS	
1040028012	FOOT	
4770052012	FIXING SCREW	
4150089003	P.C.B. SUPPORT	
MD-4368	WIRE CLIP	
MD-4810	WIRE CLIP	
2050088009	4P. EARTH TERMINAL	
4120480001	TRANSFORMER BRACKET	
2020013004	FUSE HOLDER	
2061015058	FUSE (T1.6A)	For GR-345
2061015029	FUSE (T1A)	For GR-330
4150133108	INSULATING COVER	
2030150009	WIRE CONNECTOR	
4450033005	WIRE CLAMP BAND	For GR-345
PUS-010	POWER UNIT	For GR-345
PUS-011	POWER UNIT	For GR-330
EP-4772	CORD HOLDER	
2546011001		
ETC-111-1	TUNER & EQ. AMP. UNIT	
4120452107	P.C.B. BRACKET (A)	
2335119004	POWER TRANSFORMER	For GR-345
2335120006	POWER TRANSFORMER	For GR-330
4520036204	POINTER	
CF-7954J2	SPACER	
S-2680	TENSION SPRING	
4120479009	RADIATOR SUPPORT	
1440398106	FRONT PANEL ASS.	For GR-345
1440409105	FRONT PANEL ASS.	For GR-330
1440388103	FRONT PANEL	For GR-345
1440388116	FRONT PANEL	For GR-330
1440389005	ESC. BAR	
1430104009	WINDOW PLATE	
1190005040	BLIND SHEET	
1120202004	TUNING KNOB	
1120203003	KNOB	
1120204002	MIC KNOB	For GR-345
1130121007	LEVER KNOB (A)	
1130122006	LEVER KNOB (B)	For GR-345
1130120008	PUSH KNOB	
1020077119	TOP COVER	
4610105003	CUSHION RUBBER	For GR-345
3950003015	FM ANTENNA	
2518001007	0.01 μF ± 20% OIL CAPACITOR	For POWER SWITCH (C3)

GR-345 WIRING DIAGRAM

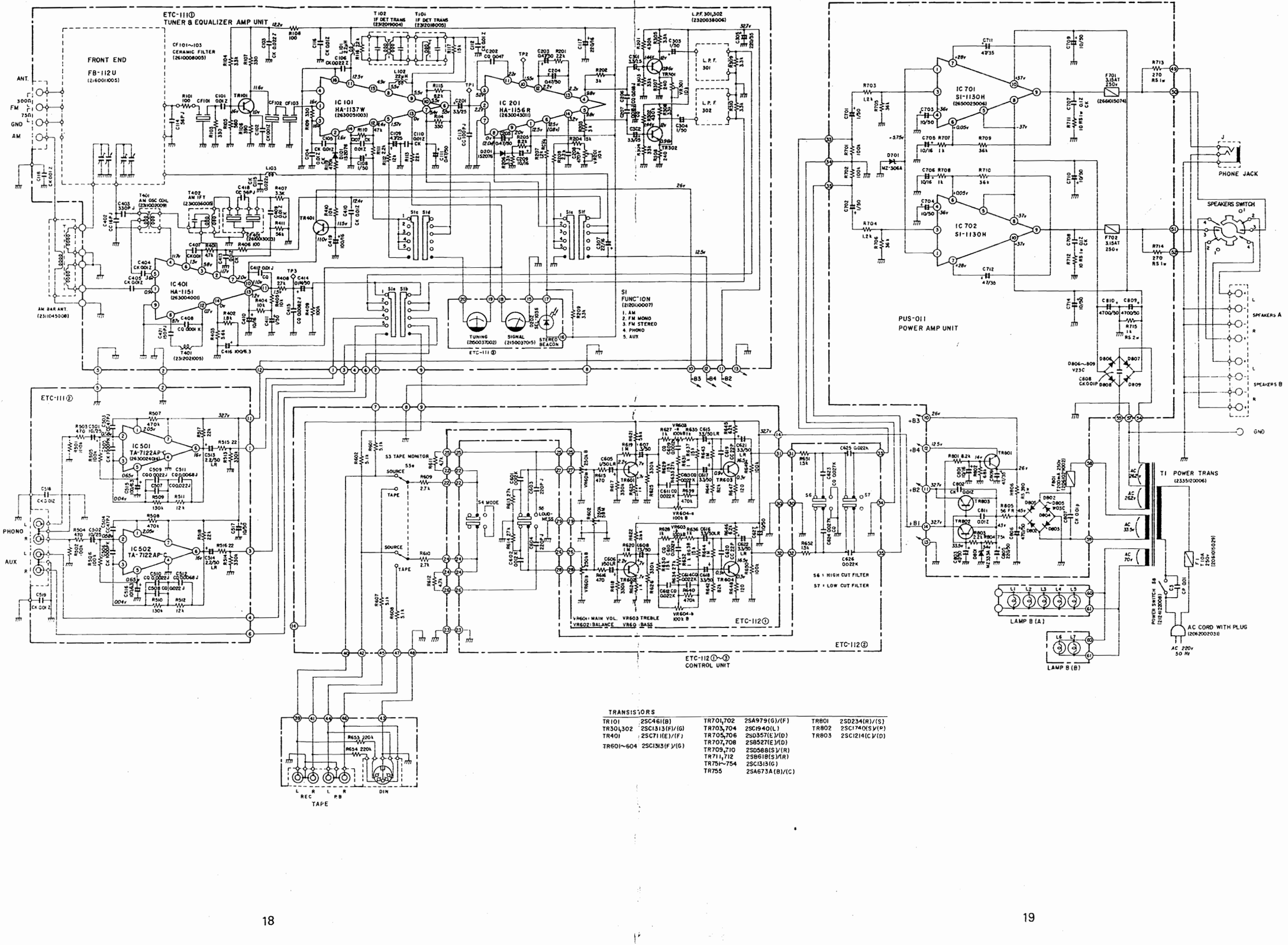


TRANSISTORS

TR101	2SC461(B)	TR701,702	2SA979(G)/(F)	TR801	2SD234(R)/(S)
TR301,302	2SC1213(F)/(G)	TR703,704	2SC1940(L)	TR802	2SC1740(S)/(R)
TR401	2SC1815(E)/(F)	TR705,706	2SD357(E)/(D)	TR803	2SC2146(C)/(D)
TR601~604	2SC1213(F)/(G)	TR707,708	2SB527(E)/(D)		
		TR709,710	2SD588(S)/(R)		
		TR711,712	2SB618(S)/(R)		
		TR751~754	2SC1313(G)		
		TR755	2SA673A(B)/(C)		

GR-330

GR-330 WIRING DIAGRAM



TRANSISTORS

TR101	2SC461(B)	TR701,702	2SA979(G)/(F)	TR801	2SD234(R)/(S)
TR301,302	2SC1313(F)/(G)	TR703,704	2SC1940(L)	TR802	2SC1740(S)/(P)
TR401	2SC711(E)/(F)	TR705,706	2SD357(E)/(D)	TR803	2SC1214(C)/(D)
TR601~604	2SC1313(F)/(G)	TR707,708	2SB527(E)/(D)		
		TR709,710	2SD588(S)/(R)		
		TR711,712	2SB618(S)/(R)		
		TR751~754	2SC1313(G)		
		TR755	2SA673A(B)/(C)		

METHOD OF ADJUSTMENT

FM/MPX ALIGNMENT

STEP	ITEM	TUNER DIAL SETTING	STANDARD SIGNAL GENERATOR					INDICATOR				REMARKS
			TYPE	FREQ.	TUNER INPUT LEVEL	MODULATION	COUPLING	TYPE	CONNECTED TO	ADJUST	ADJUST LIMITS	
1.	Detector 1	Point of no interference & station	–	–	–	–	–	Tuning meter	–	T-101	Mid point indication of tuning meter	Repeat several times (1) (2) step minimum distortion
2.	Detector 2	98 MHz	FM SSG	98 MHz	60 dB μV	1000 Hz ± 75 kHz deviation	Through dummy antenna to 300 ohm antenna terminal	Distortion meter (0.3%)	Tape output (L channel)	T-102	Minimum distortion (0.1 – 0.15%)	SELECT SW (FM MONO)
3.	Front end IFT	98 MHz	FM SSG	98 MHz	60 dB μV	1000 Hz ± 75 kHz deviation	Through dummy antenna to 300 ohm antenna terminal	Distortion meter (0.3%)	Tape output (L channel)	Front end IFT core	Minimum distortion (0.1 – 0.15%)	SELECT SW (FM MONO)
4.	Dial calibration	106 MHz	FM SSG	106 MHz	60 dB μV	1000 Hz ± 75 kHz deviation	Through dummy antenna to 300 ohm antenna terminal	Tuning meter	–	FM OSC, trimmer on front end assembly FB-112U	Center point of tuning meter	–
5.	PLL 19 kHz	98 MHz	FM SSG	98 MHz	60 dB μV	1000 Hz ± 75 kHz deviation	Through dummy antenna to 300 ohm antenna terminal	Frequency counter	TP-2 (Through 100 kohm)	VR 201	19 kHz ± 100 Hz	SELECT SW (FM STEREO)
6.	Front end IFT	98 MHz	FM SSG FM ST. SSG	98 MHz	60 dB μV	1000 Hz, L or R ± 33.75 kHz deviation, Pilot ± 7.5 kHz deviation	Through dummy antenna to 300 ohm antenna terminal	Distortion meter (0.3%)	Tape output (L channel)	Front end IFT core	Minimum distortion (0.1 – 0.15%)	SELECT SW (FM STEREO)
7.	Canceller	98 MHz	FM SSG FM ST. SSG	98 MHz	60 dB μV	1000 Hz, L or R ± 33.75 kHz deviation Pilot ± 7.5 kHz deviation	Through dummy antenna to 300 ohm antenna terminal	VTVM	Output (L channel or R channel)	VR301	Separation maximum (45 dB – 50 dB)	SELECT SW (FM STEREO)

AM ALIGNMENT

STEP	ITEM	TUNER DIAL SETTING	STANDARD SIGNAL GENERATOR					INDICATOR				REMARKS
			TYPE	FREQ.	TUNER INPUT LEVEL	MODULATION	COUPLING	TYPE	CONNECTED TO	ADJUST	ADJUST LIMITS	
1.	AM IF	–	AM IF Sweep generator	455 kHz	Regulate to a level, a half of the level, whereat the wave form distorts	–	Connect to bar antenna with one turn code	Oscilloscope	TP-3	T402	Maximum height and best symmetry curve	Check to wave form
2.	Dial calibration	600 kHz	AM SSG	600 kHz	Input level is not over to works AGC	400 Hz 30%	Connect to bar antenna with loop antenna	Oscilloscope VTVM	Tape output (L channel)	T401	Maximum audio output	Point obtain agree
3.	Dial calibration	1400 kHz	AM SSG	1400 kHz	Input level is not over to works AGC	400 Hz	Connect to bar antenna with loop antenna	Osilloscope VTVM	Tape output (L channel)	AM OSC, trimmer on front end assembly FB-112U	Maximum audio output	Repeat step 2 and 3 Receiving frequency and dial indicator
4.	Tracking 1	600 kHz	AM SSG	600 kHz	Input level is not over to works AGC	400 Hz 30%	Connect to bar antenna with loop antenna	Osilloscope VTVM	Tape output (L channel)	Bar antenna coil	Maximum audio output	–
5.	Tracking 2	1400 kHz	AM SSG	1400 kHz	Input level is not over to works AGC	400 Hz 30%	Connect to bar antenna with loop antenna	Osilloscope VTVM	Tape output (L channel)	AM antenna trimmer on front end assembly FB-112U	Maximum audio output	Repeat step 4 and 5

DENON

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